APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,040	07/24/2006	Masahiro Nakamura	062796	2001

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EXAMINER
RAO, SHEELA S

ART UNIT	PAPER NUMBER
2123	

NOTIFICATION DATE	DELIVERY MODE
03/02/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentmail@whda.com

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

> A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
> WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
> - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
>   after SIX (6) MONTHS from the mailing date of this communication.
> - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
> - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
>   Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
>   earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>02 November 2009</u>.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-56</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-56</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some * c) ☐ None of:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
         application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   This Office action is in response to papers filed on 2 November 2009.

2.   Claims 1-56 are pending and presented for examination.

Response to Amendment

3.   The objection made to the claims and disclosure over grammatical issues is
withdrawn in light of the amendments made.

4.   The rejection of claim 46 under 35 USC §101 because of claimed limitations
directed to non-statutory subject matter is withdrawn in light of the amendments made.

5.   The rejection of claims 1-2 and 7-56 under 35 USC §103(a) as being
unpatentable over Nousch et al (*"CAD on the World Wide Web: Virtual Assembly of
Furniture with BEAVER"*) in view of Lilly et al. (USPAP US 2005/0149219 A1) is
withdrawn.

6.   The rejection of claims 3-6 under 35 USC §103(a) as being unpatentable over
Nousch et al (*"CAD on the World Wide Web: Virtual Assembly of Furniture with
BEAVER"*) in view of Lilly et al. (USPAP US 2005/0149219 A1) and further in view of
Steele, et al. (USPAP US 2002/0184524 A1) is withdrawn.

Claim Rejections - 35 USC § 103

7.   The text of those sections of Title 35, U.S. Code not included in this action can
be found in a prior Office action.

8.   Claims 1, 2, 7-18, 20-21, 29-30 and 32-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over *"CAD on the World Wide Web: Virtual Assembly of Furniture with BEAVER"* by Nousch et al. in view of US Patent No. 5,717,598 to Miyakawa et al.

The limitations of the instant invention are taught and/or fairly suggested by the references of prior art as aforementioned as follows.

Claims 1 and 46 are directed to a production design facility designed to be capable of performing a production design of a prescribed product present in a real space and formed by assembling prescribed components, by displaying the components in a virtual space. The facility and program, respectively claimed by claims 1 and 46, comprise: said production design support facility receives an input from a user to arrange a plurality of component objects by copying the component objects within a virtual space configured as a working space – taught by Nousch et al. (hereinafter referred to as "Nousch") on page 114 in section 3 where the user designs a model through the interactive assembly of virtual components through the direct manipulation of the visualized 3D model; cooperation management means for associating assembly procedure data showing combination of the assembly enabled components and assembling order thereof with data for each of the plurality of component objects so that each of the component objects are configured for display in the virtual space, said cooperation management means managing the component objects – taught by Nousch in section 3 on page 114 where the user can directly manipulate the virtual model through interaction with its graphical representation and in section 4.1 on page 117

where the knowledge database is explained; object display means for displaying each of the component objects in the virtual space based on the data for each of the plurality of component objects – described by Nousch in section 3 on page 114; coordinate data acquisition means for acquiring coordinate data of each of the component objects arranged within the virtual space based on the received input from the user and displaying each of the component objects in the virtual space by the object display means – taught in Figure 7 in section 4.2 on page 118 as the navigation console. Although Nousch teaches the elements of the production design facility, the reference of prior art falls short of teaching a working time output means or scheduling element. For this reason, the prior art of Miyakawa et al. (hereinafter referred to as "Miyakawa") is relied upon. With regard to the element working time output means for outputting an element working time required for an assembly of one component object with other component object in the working space on the basis of a distance between these component objects arranged within the virtual space, said distance is computed from the acquired coordinate data, and assembly procedure data related to the objects and cooperatively managed by the cooperation means is taught by Miyakawa beginning in column 11 line 5 where the assemblability evaluation method is explained. The method starts by classifying operations involved with the attachment of the parts then defines degrees of difficulty/easiness that is involved with the attaching of parts, next classifying these factors sot that the index indicating the degrees of easiness can be determined and finally estimating the attachment costs and time. Miyakawa continues this process and further defines the estimation step in column 20 at lines 20-25 by determining an

assemblability evaluation score in accordance with the assembling time so that an attachment time can be calculated. Also see col. 24:ll. 15-26, col. 29:ll. 25-47, col. 32:ll. 37 et seq. - the listed sections of the prior art of Miyakawa detail the aspect of calculating working time based on coordinate data. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the assemblability method in a virtual environment as taught by Miyakawa with the virtual production design facility of Nousch so as to formulate a working time for assembly of components based upon the distance of the attachable components within a working space so as to determine the manufacturability, i.e. level of difficulty, based upon time, distance and design information so that assemblability can be accomplished in a timely and accurate manner while limiting cost and delay as stated in column 1, lines 26-60.

With regard to claims 2 and 30 the design facility further includes an assembly enabled relation determination means for determining whether or not the components are related to the component object displayed in the virtual space have assembly enabled relationships. Nousch teaches this aspect in section 3.2 on page 115 where a snapping mechanism is provided to verify the components enable relationship.

Claim 7 is directed to an object moving instruction reception means for receiving an instruction to move the component object displayed in the virtual space to an arbitrary position in the virtual space and the display means is adapted to display the component according to the moving instruction. The prior art by Nousch teaches this in Figure 3 on page 115 and explains it in section 3.2 on page 116, where the mouse is

used to drag and drop the object and the program interprets this as the command to add or remove the object.

Claim 8 further defines the instant invention as including a component supply unit for supplying a prescribed component in the virtual space as a component supply unit object, based on component supply unit object data, along with the cooperation management means and the object moving instruction reception means. The document by Nousch teaches this aspect in section 3.3 on page 116 as a shopping list is generated.

Claim 9 requires the virtual space to be composed of one or a plurality of virtual space elements comprising a joint capable of mutually connecting the virtual space element, the component object, and the component supply unit object, wherein the movement of the object to the arbitrary position in the virtual space is adapted to perform according to the joint. Nousch teaches this in section 3 on page 115 where the hinges and other fittings are described.

Claim 10 states the assembly procedure data reception means as receiving assembly procedure data related to the prescribed product or for receiving the assembly procedure data related to other product different from the prescribed product and Nousch teaches this element in section 3.3 on page 116.

Claim 11 includes an assembly procedure data edit instruction reception means for receiving an instruction to edit at least one of the data of a combination and an assembling order of the component in the assembly procedure data. Nousch teaches this in section 3.2 on page 116 where how a modification is handled is explained.

Claims 12-15 are directed to associating the components with component numbers where the automated system includes metadata that is used for fitting determination and enables searching a database containing data regarding each of the components and their fittings. Nousch includes a knowledge database that is divided into sections that stores pertinent information regarding the parts and components of the virtually assembled products in section 4.1 on page 117.

Claim 16 requires a storage means for storing the assembly procedure data and the component object data. The invention by Nousch is one that uses a computer and a CAD system, the use of computing technology inherently incorporates/includes a storage means.

Claim 17 calls for a graphic element work display means for displaying on screen the element working time outputted within the production design system. Nousch teaches the use of a graphical user interface, i.e. display means.

Claim 18 cites the use of one or a plurality of steps to complete the assembly of a product. Section 3 of the Nousch reference teaches the steps taken for assembly of a closet.

Claim 20 includes a graphic element work display change instruction reception means for receiving a display change instruction related to the change of a display such as an addition, deletion, and rearrangement of the graphic element work. Nousch teaches this aspect in section 3 on page 114.

Claim 21 calls for an assembly enabled relation determination means for determining whether or not the components are related to a component displayed in a

virtual space have an assembly enabled relation. Nousch teaches this in section 3.2 on page 115.

Claim 29 comprises a step display means for modeling one or a plurality of steps and displaying them on a screen along with change instruction reception means for receiving change instructions related to an addition, deletion and rearrangement of a modeled step. As Nousch explains, the BEAVER system steps through the design and assembly process of designing and building a closet. The virtual design system allows for changes to be made to the design prior to the building of the product as explained in section 3 beginning on page 114.

Claims 32-34 include a total weight calculating means for calculating total weight data of one or a plurality of the components; this element is taught by Nousch in section 4.1 on page 117.

Claims 35-37 are directed to a workability information output means for outputting workability information related to a workability of a worker. In section 1 of the document by Nousch, this aspect of the instant invention is addressed.

Claim 38 requires the terminal device and server device of the instant invention to be connected for communication purposes via a communication line network such as the Internet. As stated in section 1, Nousch teaches the use of the Internet over the World Wide Web.

Claims 39-42, 47-50 and 55 require a verification information reception means which is used to show positioning of an object, execution time of the works, and is able to receive information. This feature is taught by Nousch in section 3.1 on page 115.

While claims 43-45, 51-53 and 56 require deviation information output means for outputting, transmitting or correcting deviation information, this element is also taught by Nousch in section 3.1 on page 115.

Claims 54-56 further define the use of a computer means. Claim 54 uses a portable and wirelessly communicable terminal device and claims 55-56 are directed to the use of a computer readable medium. Both Nousch and Miyakawa use a computer for carrying through their invention. Although neither Nousch nor Miyakawa specifically state the use of a portable and wireless computing device, it is inherent that both inventions are for use on a computer and it is well known that a portable and wireless computing device can be used for all the same reasons as that of a wired unit.

9.   Claims 19, 22-28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nousch et al (*"CAD on the World Wide Web: Virtual Assembly of Furniture with BEAVER"*) in view of US Patent No. 5,717,598 to Miyakawa et al. as applied to claim 1 above, and further in view of Lilly et al. (USPAP US 2005/0149219 A1).

Claim 19 requires the prescribed order to be a work orderMiyakawa teaches the use of processing orders in an assembly order in step 81 in column 19, lines 53-60. Additionally, Lilly teaches the use of work orders in the abstract of the published document.

Claim 22 is directed to the work output means outputting a working time corresponding to the component object relationship. Miyakawa teaches this in column

20 at lines 20-25 as well as in the other sections mentioned above in relation to claim 1. In addition to the teachings of Miyakawa, Lilly teaches this in paragraph [0011].

Claim 23 requires the element working time to include at least one man element working time showing a working time by a worker and a machine element. Lilly teaches that man-power and machine power are a resource and includes this understanding in the calculation of a working time as explained in paragraphs [0018] and [0024].

Claims 24-25 are directed to the element working time being dependent upon changes by a separation distance between one assembly enabled component object and another. Lilly teaches of multi-level work orders wherein branched sequence of operations is handled; each branch includes operations for manufacturing an intermediate product used in the manufacture of the final product. Each of the operations may or may not be handled by the same machine and could include a distance separating the machines within a facility; hence, this distance must be accounted for in terms of scheduling, see paragraph [0041].

Claim 26 associates worker characteristic data to be stored in a storage means with an individual worker. Lilly equates workers to resources and stores resource information within the storage means, see paragraph [0037].

Claims 27-28 are directed to a tact time parameter that is calculated, set and displayed. In the prior art by Lilly, tact time is similar to a sequence of operations as explained in paragraph [0053].

Claim 31 states that the working time outputs a working time corresponding to the component object related to the step received. As stated above, Lilly teaches that the scheduling means takes into account any changes that are made.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used work orders and associate working time with the components and machines as done by Lilly with the inventions of Nousch and Miyakawa so as to provide a computerized system for performing accurate and timely scheduling of work orders within a manufacturing environment as noted by Lilly in paragraph [0010].

10.   Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over *"CAD on the World Wide Web: Virtual Assembly of Furniture with BEAVER"* by Nousch et al. in view of US Patent No. 5,717,598 to Miyakawa et al. as applied to claim 1 above, and further in view of US Patent Application Publication No. US 2002/0184524 A1 to Steele et al.

Claims 3-6 further include a first and second report means for reporting information showing that the components do not have assembly enabled relations in the combination of the components. Although the references of prior art to Nousch and Miyakawa, taken in combination, teach the components having assembly relationships with other components, they do not teach the presence of reporting means indicating the lack of enabled relations. For this reason, the prior art of Steele et al. (hereinafter referred to as "Steele") teach of an analysis and corrective action planning method and means for assessing problems associated with components or assemblies of such. As

described in paragraph [0038], Steele states that problems can be discovered before, during or after the manufacturing process. Fig. 6 illustrates how a problem or defect is handled including the generating of reports. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the report generating aspect of the invention by Steele with the virtual design and assembly of Nousch/Miyakawa so as to create a document that identifies any problems or defects that may have arisen during design and/or assembly for purposes of data logging and notification.

Response to Arguments

11.   Applicant's arguments with respect to claims 1-56 have been considered but are moot in view of the new ground(s) of rejection.

12.   On page 5 of Applicant's response, it is stated that an art based rejection for claim 55 was not made and thus the next action cannot be made final. The previous Office action addressed the limitations of claims 55 and 56 as they are similar to that of claims 39-42 & 47-50 and 43-45 & 51-53, respectively. The listing of the claim numbers, namely claims 55 and 56, were inadvertently omitted, but the limitations were rejected. Therefore, the finality of this Office action is appropriate.

Conclusion

13.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela Rao whose telephone number is (571) 272-3751. The examiner can normally be reached Monday - Wednesday from 9:00 am to 3:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez, can be reached on (571) 272-3753. The fax number for the organization where this application or any proceeding papers has been assigned is (571) 273- 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. It should be noted that status information for unpublished applications is available through Private

PAIR only. For more information about the PAIR system, see **http:// pair-direct.uspto.gov**. Should any questions arise regarding access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sheela Rao/
Examiner, Art Unit 2123
February 22, 2010

/Paul L Rodriguez/
Supervisory Patent Examiner, Art Unit 2123